

Appln. No. 10/707,984  
Docket No. 140804/GEM-0097

### REMARKS / ARGUMENTS

#### Status of Claims

Claims 1, 3-11, 13, 15-17 and 19-21 are pending in the application and stand rejected. Applicant has canceled Claims 3, 11, 15, 17 and 21, and has amended Claims 1, 4, 5 and 13, leaving Claims 1, 4-10, 13, 16, and 19-20 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §112, second paragraph and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

These amendments and accompanying remarks were not presented earlier because Applicant did not fully appreciate the nature of the Examiner's position until the Applicant was advised in more detail of the position by the final rejection. The claim amendments presented herein, which Applicant respectfully requests entry thereof, should require only a cursory review by the Examiner as they include only elements presented in earlier examined claims. Accordingly, such amendments should not require further consideration or search.

#### Rejections Under 35 U.S.C. §112, second paragraph

Claims 1, 3-11, 13, 15-17 and 19-21 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner remarks that a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite under MPEP §2173.05(c). More specifically, the Examiner remarks that Claims 1 and 13 recite a first range and a narrower second range within the same claim, and that the balance of the claims are rejected as being dependent upon Claims 1 and 13.

Applicant traverses this rejection for the following reasons.

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Applicant has amended Claims 1 and 13 to remove the language reciting the broader first range, leaving only language reciting the narrower second range. No new matter has been added, and only language presented in earlier examined claims remains for consideration.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §112, second paragraph, which Applicant considers to be traversed.

**Rejections Under 35 U.S.C. §103(a)**

Claims 1, 3-9, 11, 13, 15-17, 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chappo (U.S. Patent No. 6,510,195, hereinafter Chappo) in view of Luhta et al. (Conference paper entitled "Back Illuminated Photodiodes for Multislice CT", hereinafter Luhta).

Claims 10 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chappo and Luhta, as applied to Claims 1 and 13 above, and further in view of Doubrava et al. (U.S. Patent No. 6,512,809, hereinafter Doubrava).

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that the obviousness rejection based on the References is improper as the References fail to teach or suggest each and every element of the instant invention in such a manner as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

**Regarding Claims 1, 3-9, 11, 13, 15-17, 20 and 21**

Applicant has amended Claims 1 and 13 to now recite, *inter alia*,

*"...wherein the first layer has a uniform thickness of equal to or less than about 100 microns; and*

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wherein the array of backlit photodiodes includes neighboring backlit photodiodes having a *cell-to-cell signal crosstalk of equal to or less than about 2% in response to the first layer having a uniform thickness of equal to or less than about 100 microns.*"

(Claim 1); and

"...wherein the thickness of the first layer is equal to or greater than about 25 microns and equal to or less than about 100 microns; and

wherein the array of backlit photodiodes includes neighboring backlit photodiodes having a *cell-to-cell signal crosstalk of equal to or less than about 2% in response to the first layer having a thickness of equal to or less than about 100 microns.*" (Claim 13).

Dependent claims inherit all of the limitations of the respective parent claim.

I. Chappo Fails to Teach or Suggest the Claimed Thickness of the First Layer

In rejecting Claims 1 and 13, the Examiner acknowledges that Chappo is silent with regards to the thickness of the first layer, however, and without more, the Examiner then alleges that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working range involves only routine skill in the art, and cites *In re Aller*, 105 USPQ 233, in support thereof. Paper 20051026, page 4.

In respectful disagreement with the Examiner, Applicant submits that Chappo falls wholly short of disclosing all that is required for proper application of *In re Aller*. For example, *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), has held that an exception to this discovering rule is where the parameter to be optimized was not recognized to be a result-effective variable. That is, the prior art did not optimize, or suggest to optimize, the parameter that is optimized by the invention. "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." MPEP 2144.05 (II)(B) citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

Here, Applicant respectfully submits that Chappo, by failing to teach, suggest, or even make reference to, the thickness of the first layer being a result-effective variable with respect to cell-to-cell signal crosstalk, one skilled in the art necessarily could not

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apply Chappo to arrive at the claimed invention, which optimizes a parameter not recognized by Chappo as a result-effective variable.

Accordingly, Applicant respectfully submits that Chappo fails to teach or suggest the claimed thickness of the first layer, and therefore fails to establish a *prima facie* case of obviousness.

II. Chappo and Luhta Fail to Teach or Suggest the Claimed Cell-To-Cell Signal Crosstalk In Response to the First Layer having a Uniform Thickness

In rejecting Claim 1, the Examiner acknowledges that Chappo is silent with regards to the cell-to-cell signal crosstalk of the array, and looks to Luhta to cure this deficiency (Paper 20051026, page 5).

Here, the Examiner applies Luhta to modify Chappo by including slots (from Luhta) into the back illuminated photodiode layer (of Chappo) to arrive at a crosstalk of 1%. Paper 20051026, page 5.

As such, the modified Chappo, as suggested by the Examiner, necessarily includes slots.

In rejecting Claim 21, language now incorporated into Claim 1, the Examiner remarks that "A uniform thickness would be interpreted to one of ordinary skill in the art as *the bulk substrate thickness without modification*." (Emphasis added). Paper 20051026, page 6.

Applicant agrees with the interpretation that a uniform thickness is a thickness without modification, which is consistent with the application as filed, showing in Figures 1 and 2 a first layer 200 *without slot modifications*.

However, if one skilled in the art were to apply the Examiner's combination of Chappo and Luhta, they necessarily would be taught to modify the Chappo back illuminated photodiode layer to include the Luhta slots, which would result in a bulk substrate thickness *with modification*, not *without modification*.

Accordingly, Applicant submits that Chappo and Luhta fail to teach or suggest the claimed cell-to-cell signal crosstalk where the first layer has a *uniform thickness without modification*, and therefore fails to establish a *prima facie* case of obviousness.

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Regarding Examiner's Paragraph 8, Page 9, Paper 20051026

Regarding the uniform thickness of the first layer, the Examiner remarks in Paragraph 8, page 9, that "One skilled in the art would have interpreted uniform thickness to refer to the thickness of the base semiconductor layer and not the variations introduced in the surface topology by the slots or any other micromachining... In this regard, the BIP taught by Luhta et al., would satisfy the requirement for a uniform thickness."

Applicant respectfully disagrees with the Examiner that Luhta satisfies the requirement for a uniform thickness *as claimed*, and further submits that *all claim limitations must be considered*.

As previously presented, Claims 1 and 13 recite, *inter alia*,

"...wherein the array of backlit photodiodes includes neighboring backlit photodiodes having a *cell-to-cell signal crosstalk of equal to or less than about 2% in response to the first layer having a uniform thickness of equal to or less than about 100 microns.*"

Here, Applicant claims that the defined cell-to-cell signal crosstalk is specifically *in response to* the first layer having a defined uniform thickness.

In Luhta, the reduced crosstalk appears to be in response to the presence of the slots (see Luhta, page 239 "The method which we present in this paper is to cut slots in the silicon..."), and not in response to the first layer having the claimed uniform thickness.

If the Examiner is alleging that the Luhta layer with slots is somehow equivalent to the claimed first layer having a uniform thickness, by possibly segmenting the Luhta layer into a base layer and a surface topology layer, then Applicant respectfully submits that Luhta fails to teach the claimed cell-to-cell signal crosstalk being *in response to* the base layer having the claimed uniform thickness, as Luhta clearly teaches that it is the cut slots that provide the reduced crosstalk.

Accordingly, Applicant submits that Luhta fails to teach or suggest wherein the array of backlit photodiodes includes neighboring backlit photodiodes having a *cell-to-cell signal crosstalk of equal to or less than about 2% in response to the first layer having a uniform thickness of equal to or less than about 100 microns*, and therefore

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fails to establish a prima facie case of obviousness with regards to the claimed uniform thickness.

Regarding Claims 10 and 19

In view of Doubrava not being used to reject Claims 1 or 13 on grounds of obviousness, Applicant respectfully submits that Doubrava fails to cure the deficiencies of Chappo and Luhta with regard to Claims 1 and 13, and as a result, the combination of Chappo, Luhta and Doubrava, fails to establish a prima facie case of obviousness against amended Claims 1 and 13.

Dependent claims inherit all of the limitations of the respective parent claim. Accordingly, Applicant submits that Chappo, Lubta and Doubrava, fails to establish a prima facie case of obviousness against Claims 10 and 19.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

Applicant has amended the claims for presentation in better form for consideration on appeal, and to more clearly reflect Applicant's invention. The claim amendments should only require a cursory review by the Examiner as they only include language presented in earlier examined claims.

In light of the foregoing remarks and amendments, Applicant respectfully submits that the proposed amendments and arguments comply with 37 C.F.R. §1.116 and should therefore be entered, and with their entry that the Examiner's rejections under 35 U.S.C.

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§112, second paragraph, and 35 U.S.C. §103(a), have been traversed, and that the application is now in condition for allowance. Such action is therefore respectfully requested.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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